

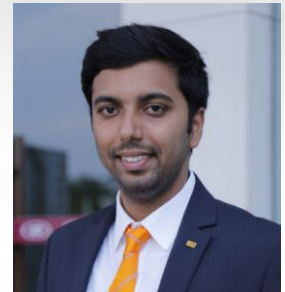


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Open source technologies shapes interoperability standard for sustainable Industrial IoT

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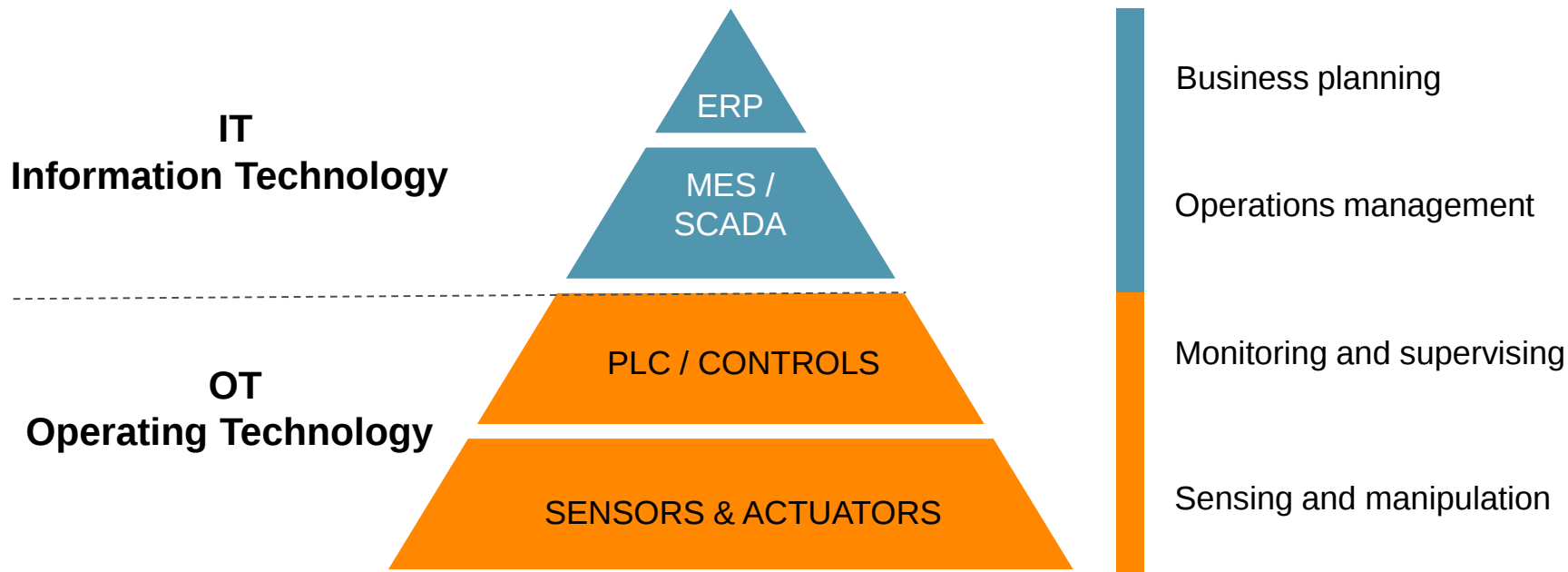


Automation pyramid

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Manufacturing spectrum





Machine Builder

“I want ...

one vendor-independent
communication standard

Useable for all kinds of
different applications like
motion, safety, etc.

Additional traffic (e.g. video)
may not impact machine
performance”



Demands from different stakeholders of industry

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Factory owner

"I want to..."

easily and economically
integrate and **connect**
machines from different
suppliers."



Demands from different stakeholders of industry



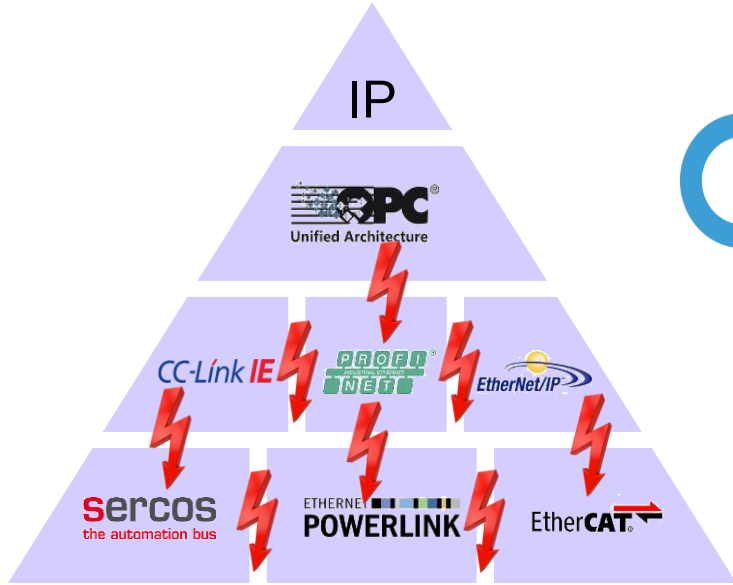
Data scientist

"I want to...

be able to **securely read data** from any controller and any device to identify opportunities for **optimization** of the production process.

be able to **adapt the data** set to my needs without support of the designer of the original equipment."

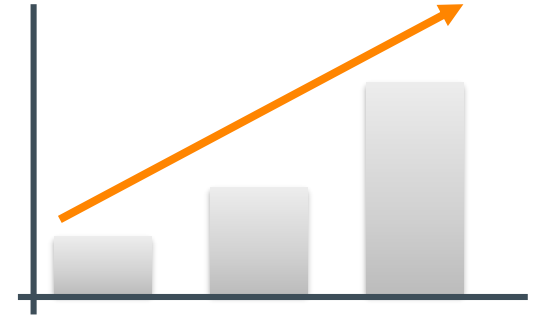




Lack of connectivity
Fragmented ecosystem



IoT challenges



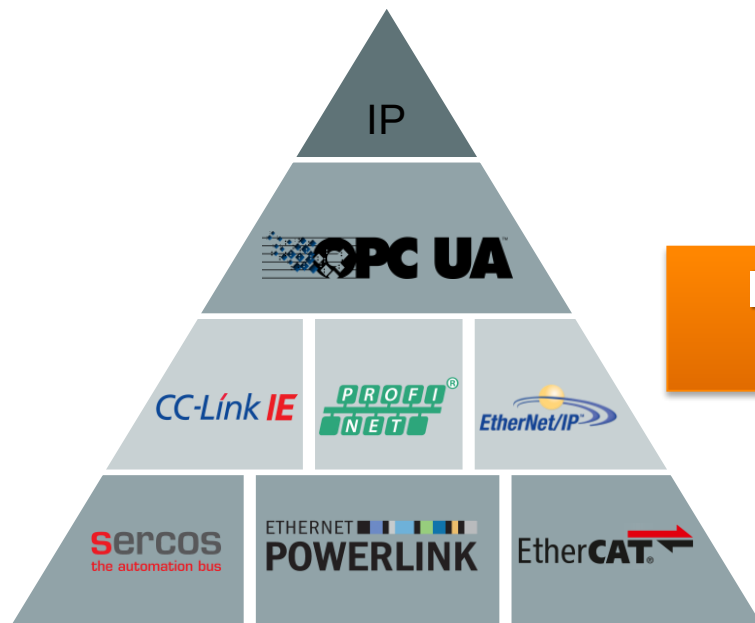
Increasing requirements

Value of OPC UA over TSN

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Convergence of OT and IT



Industrial
IoT

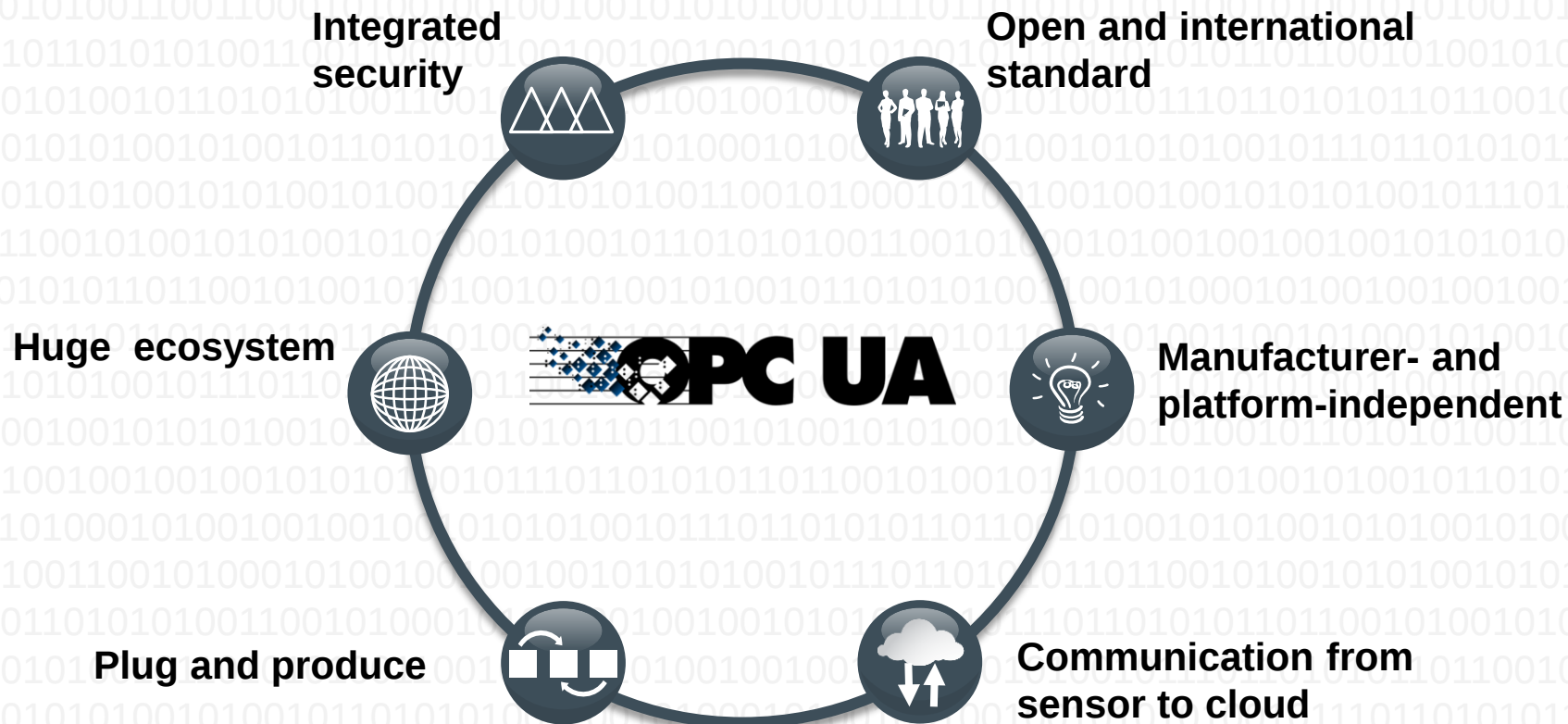


The undisputed Industrial IoT highway

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Open Platform Communication Unified Architecture



Time Sensitive Networking (TSN) - Standards



According to IEC / IEEE 60802 joint working group

Time Synchronization



- IEEE802.1AS/AS-2019

Network Management



- IEEE802.1Qcc

TSN

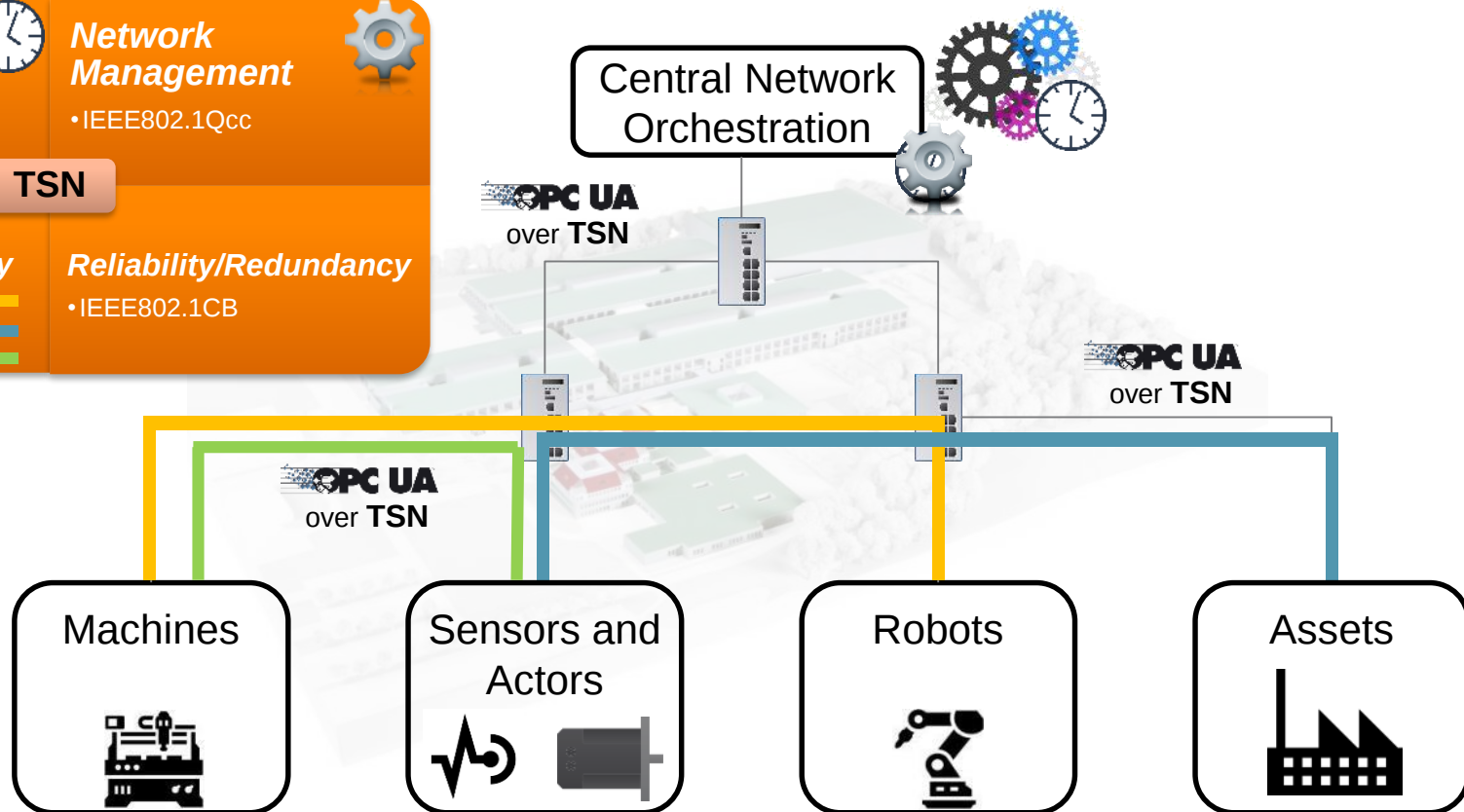
Scheduling & Latency

- IEEE802.1Qbv
- IEEE802.1Qav



Reliability/Redundancy

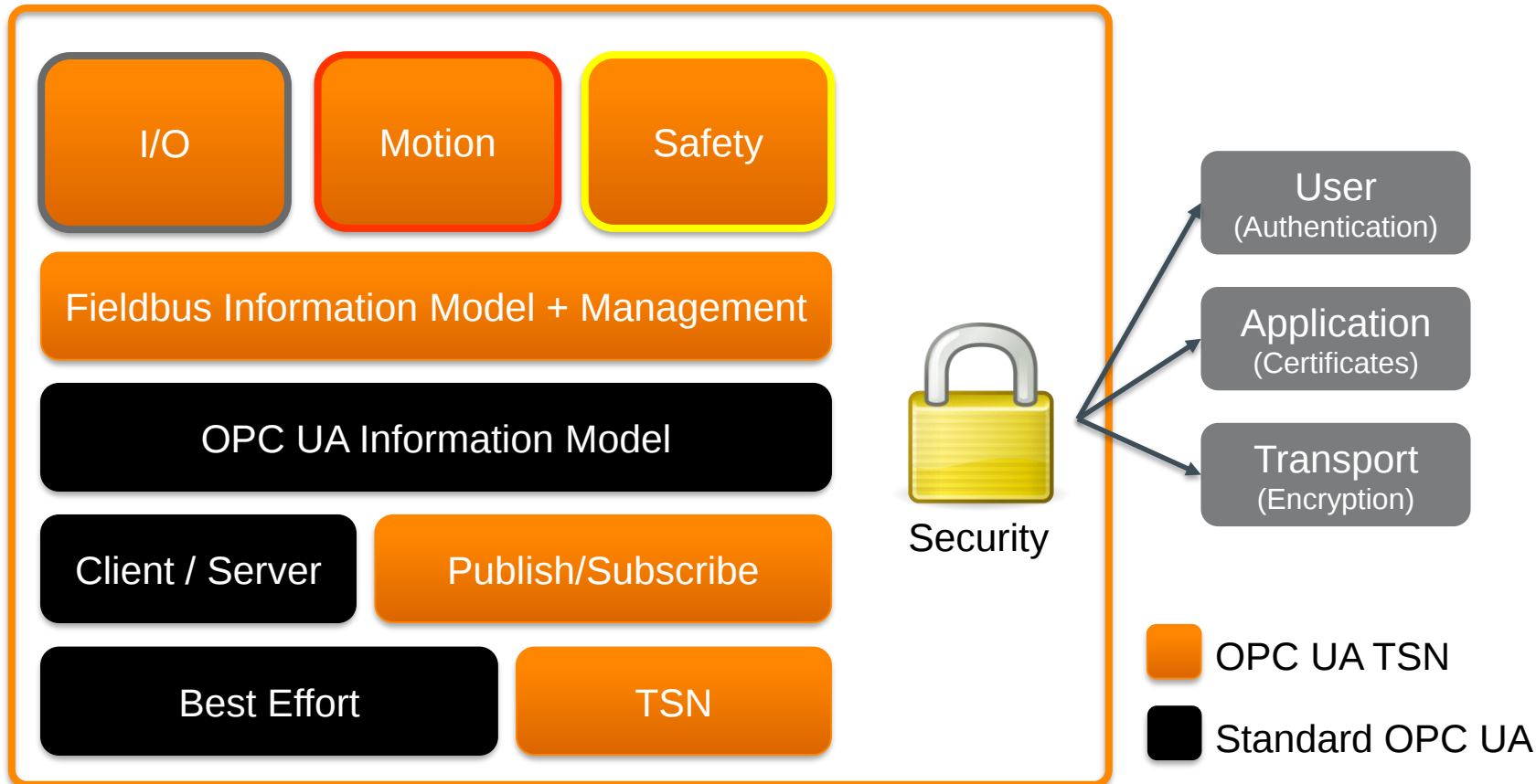
- IEEE802.1CB



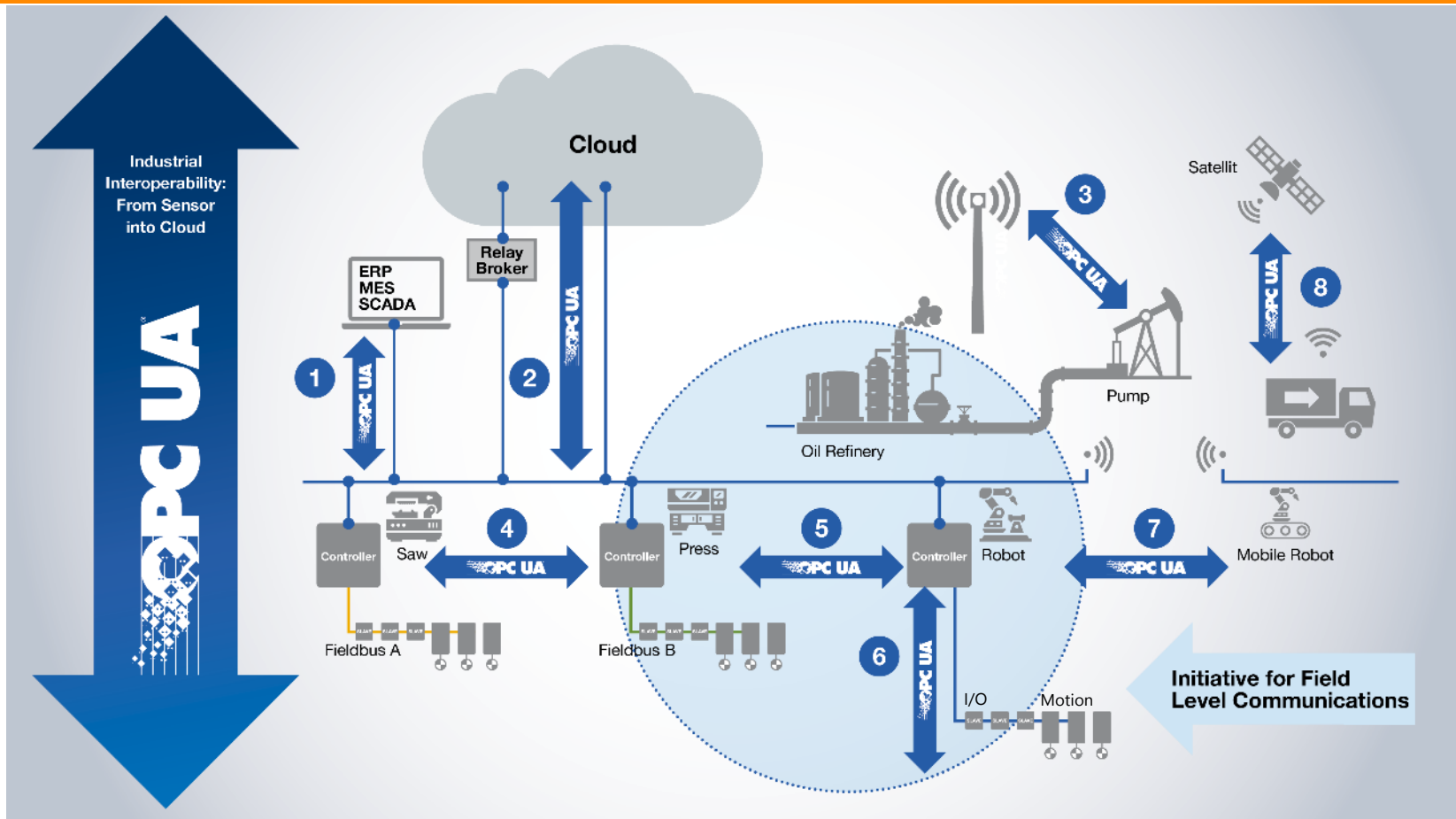
OPC UA TSN - Building blocks



Standardization on all layers for maximum interoperability



Industrial interoperability from sensor to cloud





Enhancing OT-applications with IT capabilities

- Seamless communication
- Unified semantics from sensor to cloud
- Plug & produce
- Up to 10,000 nodes in one network
- Security down to the sensor
- The largest eco-system “ever in history”





Industrial IoT is offering numerous opportunities to create changes in operational innovation and excellence

